DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 15, under Objection to the Claims, filed 10/27/2009, with respect to the objections to claims 1, 18, 30, 46, 47, 59, and 62 have been fully considered and are persuasive. The objections of claims 1, 18, 30, 46, 47, 59, and 62 has been withdrawn.

2. Applicant's arguments, see page 15, under Rejections Under 35 USC Section 112, filed 10/27/2009, with respect to the rejection to claim 9 have been fully considered and are persuasive. The rejection of claim 9 has been withdrawn.

3. Applicant's arguments with respect to claims 49, 55, and 65 have been considered but are moot in view of the new ground(s) of rejection.

4. Applicant's arguments filed 10/27/2009 have been fully considered but they are not persuasive. On page 16, line 15-page 18, line 24, the Applicant argues that with regard to claim 1, neither the Varvat nor Buttner references discloses or suggests a channel radius of between 0.25 m and 0.75 m. Applicants respectfully disagree with the Examiners contention that such a change in size would be generally recognized as being within the level of ordinary skill in the art and cites MPEP, Section 2144.04(IV)(A) for the statement that "where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device." Applicant states that in contrast to the quoted language, the claimed dimension including "a radius of between 0.25 m and 0.75 m" performs differently as a result of the selected range of radius and is not a mere relative dimension. Applicant refers to paragraph [0115] of Applicants' published

application to show that if the radius R of each channel 12 is small, obviously, each channel cannot hold much organic waste. Therefore, for the same processing power, the vessel would need to comprise many individual channels together with the associated axles, paddles and motors, making the entire vessel complex and expensive. That if the radius R is large, the paddles must be very strong which increases the costs of the machine and increases the risk of rock-hard deposits. Finally, that the optimum channel radius has been found to be in the range 0.25m to 0.75m or, even more advantageously, in the range 0.3m to 0.6m. This is not persuasive. Varvat discloses every limitation of claim 1 except for "with a radius of between 0.25m and 0.75m". The limitation of "with a radius of between 0.25m and 0.75m" was rejected on the basis that it involved a mere change in the size of a component and was supported by Buttner which taught screw diameters of 0.267 meters. The Applicant has provided a conclusion that the radius of between 0.25m and 0.75m performs differently as a result of the range of radius and is not a mere relative dimension. While Applicant does not state how the range of radius performs differently, it appears based on the quoted language that the claimed range of radius allows each channel to hold more organic waste than if the channels were smaller. First, it would have been obvious to a person having ordinary skill in the art that larger channels would allow each channel to hold more organic waste. Second, there is no indication that a device having the claimed relative dimensions would perform differently than the prior art device, it would merely provide the predictable result of holding more organic waste in each channel. The quoted section of Applicant's published application further states that with a smaller radius, for the same processing power, the vessel would need to comprise many individual channels together with the associated axles, paddles and motors, making the entire vessel complex and

expensive. It seems that this section is stating that in order for a device having smaller channels to produce the same amount of dried organic waste as a device having larger channels it would require more channels with their associated equipment. It would be obvious to a person having ordinary skill in the art to use larger channels to reduce the number of channels required to produce a certain amount of dried organic waste. There is no indication that a device with a larger radius would perform differently than the prior art device. Varvat in view of Buttner would provide from Buttner a screw diameter of 0.267 meters or a radius of about 0.133 meters. It would have been obvious to a person having ordinary skill in the art to increase the radius of the screws and their corresponding channels to the larger radius of 0.25 meters as this involves a mere change in the size of a component and would not result in the device performing any differently than the device of Varvat. While Varvat in view of Buttner would involve increasing the size of a component, the Examiner will also address if the radius of the channel is large as it is quoted from paragraph [0115] of Applicants' published application. The quoted section states that if the channel is large, the paddles and axles have to be very strong and that larger channels can lead to the formation of rock-hard deposits. However, Varvat discloses in column 4, lines 5-11 that the device has conveyor screws sufficient to transport the particulate material to be treated in the channels and that the screws stir and agitate the material. Therefore, the Applicant has not shown that a device having the claimed relative dimensions would perform differently than the prior art device of Varvat in view of Buttner.

5. On page 18, line 25-page 19, line 19, the Applicant argues that Varvat shows heated gases following the path defined by trough bank 20 and not the trough 22. That Varvat, therefore, does not disclose or suggest a first heater for heating the channels and an interface

between adjacent channels that is heated as recited in claim 15 and that Buttner does nothing to cure this deficiency of Varvat. This is not persuasive. At the outset, according to line 9 of the abstract of Applicants' published application there is an interface (22, 24) between two channels and this interface is shown at 22 of Applicants' fig. 6a and described at paragraph [0121] of Applicants' published application. The interface 22 of Applicants' fig. 6a is heated by a flow of hot gas generated by the first heater as the hot gas flows around the channels. Similarly, Varvat shows an interface (figure 3 and figure A below) between two channels. A thorough examination of figures 1-3 of Varvat shows that a hot gas 48 (figure 1) flows along the outside of the channels between the channels and the baffles 32 (figure 1) as described at column 4, lines 48-62 to keep the hot gas flow separate from the noxious vapors released from the particulate being dried. The hot gas flows along the entire bottom portion of the channels including between the channels at the interface (figure 3 and figure A below). The hot gas must flow along the interface in order to get through the air passage created by the baffles 32a, 32b, 32c (figure 1, column 4, lines 21-28 describing the baffles defining a continuous air passage). Therefore, Varvat does disclose a first heater 42 (figure 1) for heating the channels 22 (figures 1-3) and the interface (figure 3 and figure A below) between adjacent channels.

6. On page 19, line 20-page 21, line 8, the Applicant argues that neither Buttner nor Van Den Broek disclose or suggest adding the organic paste to a first organic powder to form a mixture and mixing and heating the mixture where the rate of addition of the organic paste to the first organic powder is such that the resulting mixture is substantially in powder form. In particular, Van Den Broek is silent as to a rate of addition of an organic paste to an organic powder. This is not persuasive. As stated in the Office action, Van Den Broek is directed to

drying sewage sludge (column 1, lines 35-36) which is first dried to a concentrated stream (column 1, line 38) or essentially an organic paste. The organic paste is added to dehydrated particulate matter or essentially organic powder to form a mixture (column 1, lines 34-40) and this mixture is dried in a dryer to produce more organic powder that is entrained in the gaseous discharge of the dryer (figure 1 showing the gaseous discharge with entrained organic powder entering duct 41 from the dryer 34, "fines, particulates" column 1, lines 38-50). The description of the fines and particulates being entrained in the gaseous discharge supports the assertion that the mixture is being dried such that the resulting mixture after mixing and heating is substantially in powder form. The Office action also stated that Van Den Broek taught controlling the rate of addition of the concentrated stream or organic paste to the first dehydrated particulate material or the first organic powder ("at a controlled rate" column 3, lines 4-9). Therefore, Van Den Broek does teach the rate of addition of the organic paste to the first organic powder is such that the resulting mixture is substantially in powder form.

Information Disclosure Statement

7. The information disclosure statement filed 10/27/2009 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-8, 15, 16, and 18-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varvat (US 5,806,205 provided by Applicant in IDS dated 12/22/2005) in view of Buttner et al. (US Patent No. 5,263,267 provided by Applicant in IDS dated 12/22/2005).

10. Regarding claims 1-8, 15, 16, and 18-25, Varvat discloses a vessel for drying organic waste (column 1, lines 8-11 describing an apparatus for dehydrating waste matter such as organic residue), the vessel comprising at least two adjacent elongate channels 22 (figure 3 showing a total of eight channels), each channel having a length (figure 3 showing that the channels have a length) and a substantially segment ("segments" column 1, lines 63-64) shaped cross section (figure 3 showing the cross section of the channels), comprising four channels (figure 3), comprising eight channels (figure 3), comprising twelve channels (figure 1 showing multiple layers of channels where each layer has eight channels as shown in figure 3), an axle 34 (figure 5) associated with each channel, each axle mounted for rotation about an axis parallel to the length of its respective channel (figure 4 showing an axle inside a channel), each axle mounting one or more helical blades 30 (figure 5 showing the axles having helical screws); an interface (figure 3 and figure A below which is similar to the interface of Applicant's figure 6a) between the two channels (figure 3 and figure A below showing spaces between each channel 22 through which the heating fluid could flow); a first heater 42 (figure 1 showing an incineration chamber) for heating the channels 22 (figure 3) and the interface (figure 3 and figure A below) between adjacent channels 22 (figure 3) is heated so as to enhance breakdown of the organic waste at the interface, the interface (figure 3 and figure A below) is heated by the first heater 42 (figure 1), except for with a radius of each channel is between 0.25 m and 0.75 m, the radius is between 0.3 m and 0.6 m, the radius is 0.4 m, the length of each channel is between 3 m and 4 m, the length

of each channel is 3 m, and during drying the axles associated with adjacent channels are arranged to rotate in opposite directions. However, Buttner et al. teaches twin counter-rotating screws (column 15, line 11) which are eight feet long or 2.44 meters long and have screw diameters of 10.5 inches or 0.267 meters (column 35, lines 8-10), during drying ("drying efficiency" column 15, lines 9-15 describing the drying efficiency being better with higher speed of counter-rotating screws) the axles associated with adjacent channels are arranged to rotate in opposite directions ("twin counter-rotating screws" column 15, line 11), and a second heater which is an electric resistance element for heating the screws (column 12, lines 14-18) in order to dry waste organic sewage (column 6, lines 67-column 7, line 2). One would be motivated to combine Varvat with Buttner et al. because the use of rotating twin screws in a counter-rotating manner is a known technique that improves the lifting and upward movement of material in an elongated mixing zone formed by counter-rotating screws as stated in Buttner et al. (column 28, lines 33-38). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Varvat reference, to include during drying the axles associated with adjacent channels being arranged to rotate in opposite directions, as suggested and taught by Buttner, for the purpose of drying waste organic sewage.

It would have been an obvious matter of design choice to increase the radius of the channels from 0.133 m to 0.25 m, 0.3 m or 0.4 m and the length of each channel from being 2.44 meters to being 3 m, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).*

Figure A.

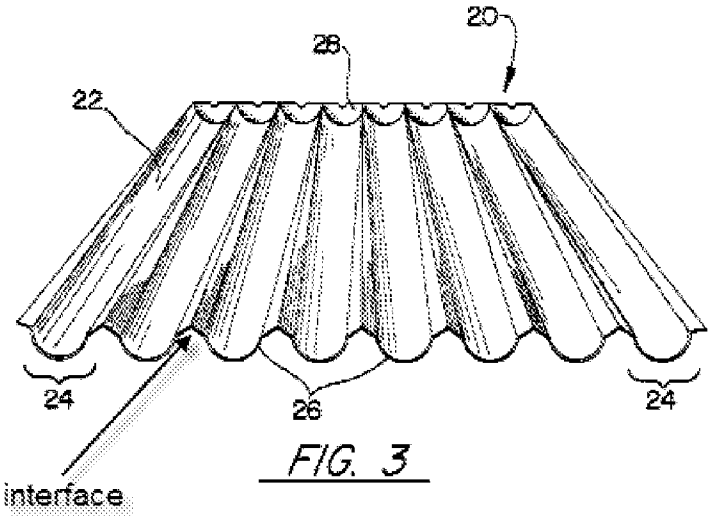


FIG. 3

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Varvat (US 5,806,205) as modified by Buttner et al. (US Patent No. 5,263,267) as applied to claim 15 above, and further in view of Sauda et al. (US Patent No. 4,661,290 cited in prior notice of references cited mailed 4/28/2009).

12. In regards to claim 17, Varvat as modified by Buttner et al. discloses the claimed invention including from Buttner et al. a second heating means comprising a plurality of resistance heating elements resident within the screw member (column 37, lines 56-58 describing resistance heating which is similar to the second heater of Applicant's Specification at page 6, lines 1-2), except for the second heater being located at the interface of the channels rather than inside the screw. However, Sauda et al. teaches an electric heater 8 (figure 1, column 6, lines 57-60) placed on the outside of the body 1 (figure 1) in order to heat the solid waste material in the hollow cylindrical body (abstract, lines 4-6). One would be motivated to combine Varvat as modified by Buttner et al. which has the prior art element of passing heated air beneath a

plurality of channels that include interfaces between the channels with Sauda et al. which has the prior art element of electric heaters placed on the outside of a hollow cylindrical body for heating solid waste material in the hollow cylindrical body to obtain the predictable result of greater heat transfer to the waste material being heated. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Varvat as modified by Buttner et al. reference, to include the second heating means comprising a plurality of heating elements on the interface of the channels, as suggested and taught by Sauda et al., for the purpose of heating the solid waste material in the body.

13. Claims 10-14 and 26-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Varvat (US 5,806,205) as modified by Buttner et al. (US Patent No. 5,263,267) as applied to claims 1 and 15 above, and further in view of Van Den Broek (US Patent No. 4,926,764 cited in prior notice of references cited mailed 4/28/2009).

14. In regards to claims 10-14 and 26-30, Varvat as modified by Buttner et al. discloses the claimed invention including from Varvat an apparatus for drying organic waste (column 1, lines 8-11 describing an apparatus for dehydrating waste matter such as organic residue) comprising: a heat exchanger (column 1, lines 45-49), the heat exchanger using the heat generated by the conversion unit 42 (figure 1, "incineration chamber" column 4, lines 48-51) to heat the vessel, the heat exchanger circulates hot gas beneath 48 (figure 1, column 4, lines 51-53 describing the path of the heated gas following arrows of 48) the vessel and from Buttner et al. a first vessel 305 (figure 18, column 34, lines 8-13 describing the preheater having a screw the same as used in carrying out the invention) according to claim 1 or claim 15, for mixing and heating the organic waste to form an organic paste (column 6, lines 52-66 describing the invention being used with

organic sewage sludge that ranges from pasty through crumbly and the feed material starting out in different physical forms at column 6, lines 39-44), adding the organic paste to a first organic powder to form a mixture (column 17, lines 4-10 describing the invention permitting the adding of a dry material recycle with the wet feed); a second vessel 326 (figure 18, column 34, lines 58-61 describing the preheated material entering the dryer) according to claim 1 or 15 for mixing and heating the mixture to form a second organic powder (column 35, lines 47-52 describing the material having a moisture content of down to about 5% after passing through the unit), a vessel 326 (figure 18) according to claim 1 or claim 15, for mixing and heating a first quantity of organic waste to form an organic powder (column 35, lines 60-65 describing the organic waste being processed from wet feed to dried material of less than 5% moisture and freely emitting air-borne dust and recycling a previously dried material at column 17, lines 1-5), except for a means for adding the organic paste to a first organic powder, means for controlling the rate of addition of the organic paste to the first organic powder, such that the resulting mixture is substantially in powder form; a conversion unit for converting a portion of the organic powder to generate heat for heating a second quantity of organic waste, and the conversion unit being a combustion unit for burning the portion of the organic powder. However, Van Den Broek teaches an apparatus with a means for adding 26 (figure 1, column 3, lines 4-6 describing the dosing screw conveyor having a variable speed drive and taking the concentrated stream from the hopper to the mixer) a concentrated stream (column 2, lines 54-61 describing a sewage sludge stream after the sewage sludge has been dewatered and concentrated at 12 of figure 1) to a mixer 28 (figure 1) where dehydrated particulate material is combined with the concentrated stream to provide a feedstock having moisture content from 30 to 50 percent (column 3, lines 7-9) that then enters a second

vessel 34 (figure 1) for further drying; a means for controlling 26 (figure 1) the rate (column 3, lines 4-5 describing a screw conveyor having a variable speed drive) of addition of the concentrated stream to the first dehydrated particulate material, and a combustion chamber 38 (figure 1) for converting a portion of the dehydrated particulate material (column 3, lines 21-30 describing the combustion chamber burning solid fuel including the dehydrated particulate sludge) to generate heat for heating (column 3, lines 31-36 describing the combustion products being used in the drier) a second quantity of sludge feedstock in order to permit absorption of the desired quantity of moisture from the sludge feedstock as it passes through the drier (column 3, lines 39-42) and to provide a feedstock having a lower moisture content than the concentrated stream (column 6, lines 4-7). One would be motivated to combine Varvat as modified by Buttner et al. with Van Den Broek because the similar devices mix dehydrated particulate material with a concentrated stream of sludge prior to the mixture entering a dryer as well as use a combustion unit for generating heat for the dryer and Van Den Broek teaches the known technique of using a dosing screw to control the rate at which the concentrated stream feeds into the mixer (column 3, lines 4-6) as well as burning dehydrated particulate sludge to generate heat (column 3, lines 21-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Varvat as modified by Buttner et al. reference, to include a means for adding the organic paste to a first organic powder, means for controlling the rate of addition of the organic paste to the first organic powder, such that the resulting mixture is substantially in powder form; a conversion unit for converting a portion of the organic powder to generate heat for heating a second quantity of organic waste, and the conversion unit being a combustion unit for burning the portion of the organic powder, as suggested and taught

by Van Den Broek, for the purpose of permitting absorption of the desired quantity of moisture from the sludge feedstock as it passes through the drier and providing a feedstock having a lower moisture content than the concentrated stream.

15. Claims 31-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buttner et al. (US Patent No. 5,263,267) in view of Van Den Broek (US Patent No. 4,926,764).

16. Regarding claims 31-38, Buttner et al. discloses a method (column 4, line 16) for drying organic waste ("waste organic sewage" column 6, line 67-column 7, line 2), comprising the steps of mixing and heating the organic waste (column 34, lines 8-13 describing a preheater that may include a screw that is the same as used in carrying out the invention) to form an organic paste (column 16, lines 31-55 describing a method for reducing the water content from 80 percent to 45 percent or less using the heated screws of the drying device); then adding the organic paste to a first organic powder to form a mixture (column 16, lines 56-column 17, line 10 describing blending dried product with wet feed material and stating that the invention permits the recycling of wet feed into the method and apparatus in any proportion) and mixing and heating the mixture (column 19, lines 7-10 describing the screws rotating and being heated), the organic waste has a water content of more than about 40% by weight (column 16, lines 38-40 describing the sludge having an initial water content of 80 percent or more), the organic paste has a water content of between about 20% and about 30% by weight (column 6, lines 52-63 describing the preferred pasty material for use in the invention as pasty material with liquid of 1-2% to 90% or more and particularly preferring organic sewage sludge), the first organic powder has a water content of less than about 10% by weight (column 35, line 50 describing the dried material having a moisture content of between 60% down to about 5% or less), mixing and heating the mixture to

form a second organic powder (column 17, lines 3-15 describing the invention recycling wet feed into the method and apparatus which would produce a second organic powder after drying the first organic powder that was recycled with the wet feed), the second organic powder has a water content of about 10% by weight (column 35, line 50 describing the dried material having a moisture content of between 60% down to about 5% or less), the preliminary step of drying organic waste to form the first organic powder (column 17, lines 10-13 describing the invention as being capable to drying aqueous waste in the substantial absence of recycled dried product and describing the use of previously dried material at column 17, line 3), and the step of drying organic waste to form the first organic powder is done by mixing and heating the organic waste (column 17, lines 10-13 describing the use of the heated rotary screw to dry the product in the substantial absence of recycling product), except for the rate of addition of the organic paste to the first organic powder is such that the resulting mixture is substantially in powder form. However, Van Den Broek teaches a sludge stream treatment system (column 1, lines 35-36) having a means for adding 26 (figure 1, column 3, lines 4-6 describing the dosing screw conveyor having a variable speed drive and taking the concentrated stream from the hopper to the mixer) a concentrated stream (column 2, lines 54-61 describing a sewage sludge stream after the sewage sludge has been dewatered and concentrated at 12 of figure 1) to a mixer 28 (figure 1) where dehydrated particulate material 56 (figure 1, column 3, lines 66-68 describing a storage hopper that retains dehydrated particulate sludge for remixing with the concentrated stream of sewage sludge) is combined with the concentrated stream to provide a feedstock having moisture content from 30 to 50 percent (column 3, lines 7-9) that then enters a second vessel 34 (figure 1) for further drying (column 3, line 13) and a means for controlling 26 (figure 1) the rate (column

3, lines 4-5 describing a screw conveyor having a variable speed drive) of addition of the concentrated stream to the first dehydrated particulate material in order to permit absorption of the desired quantity of moisture from the sludge feedstock as it passes through the drier (column 3, lines 39-42) and to provide a feedstock having a lower moisture content than the concentrated stream (column 6, lines 4-7). One would be motivated to combine Buttner et al. with Van Den Broek because the similar devices mix dehydrated particulate material with a concentrated stream of sludge prior to the mixture entering a drier and Van Den Broek teaches the known technique of using a dosing screw to control the rate at which a concentrated stream feeds into a mixer (column 3, lines 4-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Buttner et al. reference, to include the rate of addition of the organic paste to the first organic powder being such that the resulting mixture is substantially in powder form, as suggested and taught by Van Den Broek, for the purpose of permitting absorption of the desired quantity of moisture from the sludge feedstock as it passes through the drier and providing a feedstock having a lower moisture content than the concentrated stream.

17. Regarding claims 39-43, Buttner et al. discloses an apparatus for drying organic waste ("waste organic sewage" column 6, line 67-column 7, line 2) comprising a first vessel 305 (figure 18) for mixing and heating the organic waste to form an organic paste (column 6, lines 52-66 describing the invention being used with organic sewage sludge that ranges from pasty through crumbly and the feed material starting out in different physical forms at column 6, lines 39-44), adding the organic paste to a first organic powder to form a mixture (column 16, line 56-column 17, line 10 describing blending dried product with wet feed material and stating that the

invention permits the recycling of wet feed into the method and apparatus in any proportions); a second vessel 326 (figure 18) for mixing and heating the mixture to form a second organic powder (column 35, lines 47-52 describing the material having a moisture content of down to about 5% after passing through the unit); the rate of addition (column 34, lines 51-58 describing a hopper with a volume-flow-control) of the organic paste to the first organic powder is such that the resulting mixture is substantially in powder form (column 35, lines 60-65 describing the dried material having a moisture content approaching zero and dried to the extent that they freely emit air-borne dust), the organic waste has a water content of more than about 40% by weight (column 16, lines 38-40 describing the sludge having an initial water content of about 80 percent or more), the organic paste has a water content of between about 20% and about 30% by weight (column 6, lines 52-63 describing the preferred pasty material for use in the invention as pasty material with liquid of 1-2% to 90% or more and particularly preferring organic sewage sludge), the first organic powder has a water content of less than about 10% by weight (column 35, lines 60-65 describing the dried material having a moisture content of less than 5% and dried to the extent that they freely emit air-borne dust) and the second organic powder has a water content of about 10% by weight (column 35, lines 60-65 describing that even without blending of dried product with wet feed the system can achieve moisture content approaching zero percent so having dried product mixed in would further help achieve low moisture content), except for a means for adding the organic paste to a first organic powder; and a means for controlling the rate of addition of the organic paste to the first organic powder. However, Van Den Broek teaches an apparatus with a means for adding 26 (figure 1, column 3, lines 4-6 describing the dosing screw conveyor having a variable speed drive and taking the concentrated stream from the hopper to

the mixer) a concentrated stream (column 2, lines 54-61 describing a sewage sludge stream after the sewage sludge has been dewatered and concentrated at 12 of figure 1) to a mixer 28 (figure 1) where dehydrated particulate material is combined with the concentrated stream to provide a feedstock having moisture content from 30 to 50 percent (column 3, lines 6-9) that then enters a second vessel 34 (figure 1) for further drying; a means for controlling 26 (figure 1) the rate (column 3, lines 4-5 describing a screw conveyor having a variable speed drive) of addition of the concentrated stream to the first dehydrated particulate material in order to provide a feedstock having a lower moisture content than the concentrated stream (column 6, lines 4-7). One would be motivated to combine Buttner et al. with Van Den Broek because the similar devices mix dehydrated particulate material with a concentrated stream of sludge prior to the mixture entering a drier and Van Den Broek teaches the known technique of using a dosing screw to control the rate at which a concentrated stream feeds into a mixer (column 3, lines 4-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Buttner et al. reference, to include a means for adding the organic paste to a first organic powder; and a means for controlling the rate of addition of the organic paste to the first organic powder, as suggested and taught by Van Den Broek, for the purpose of providing a feedstock having a lower moisture content than the concentrated stream.

18. In regards to claims 44-48, Buttner et al. as modified by Van Den Broek discloses the claimed invention including from Buttner et al. the first vessel 305 (figure 18, column 34, lines 8-13 stating that the preheater may have the same screws used in carrying out the invention) comprising a vessel for drying organic waste ("waste organic sewage" column 6, line 67-column 7, line 2), the vessel comprising at least two elongate channels 213 (figure 8 showing the

channels which are elongate as shown in figure 4), each channel having a length (figure 4 showing that the channels have a length) and a substantially segment shaped cross-section (figure 8 showing the cross-section of the channels); an axle 88, 89 (figure 4) associated with each channel, each axle 88, 89 (figure 4) mounted for rotation (column 21, lines 10-11) about an axis parallel to the length of its respective channel 213 (figure 8), each axle mounting one or more helical blades 83 (figure 4); and a heater 317 (figure 18, column 34, line 46 describing the boiler and the channels having fluid ducts 214 closely adjacent to the bottom of the screws for auxiliary heating purposes at column 31, lines 45-48) for heating the channels, the second vessel 326 (figure 18) comprising a vessel for drying organic waste ("waste organic sewage" column 6, line 67-column 7, line 2), the vessel comprising at least two elongate channels 213 (figure 8 showing the channels which are elongate as shown in figure 4), each channel having a length (figure 4) and a substantially segment shaped cross-section (figure 8); an axle 88, 89 (figure 4) associated with each channel, each axle 88, 89 (figure 4) mounted for rotation (column 21, lines 10-11) about an axis parallel to the length of its respective channel 213 (figure 8), each axle mounting one or more helical blades 83 (figure 4); and a heater 317 (figure 18, column 34, line 46 describing the boiler and the channels having fluid ducts 214 closely adjacent to the bottom of the screws for auxiliary heating purposes at column 31, lines 45-48) for heating the channels, the apparatus for drying organic waste according to the method of claim 31 (column 1, lines 7-17 describing the invention relating to methods and apparatus for reducing volatile components from pasty material) and the screws having a diameter of 10.5 inches or 0.267 meters (column 35, lines 8-10), except for a radius of between 0.25 m and 0.75 m.

It would have been an obvious matter of design choice to increase the radius of the channels from 0.133 m to 0.25 m, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).*

19. Claims 49-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buttner et al. (US Patent No. 5,263,267) in view of Van Den Broek (US Patent No. 4,926,764) and Metzner (US Patent No. 2,459,951).

20. Regarding claims 49-64, Buttner et al. discloses a method (column 4, line 16) for drying organic waste ("waste organic sewage" column 6, line 67-column 7, line 2) using a vessel (figures 4 and 8) including at least two elongate adjacent channels 213 (figure 8 showing the channels which are elongate as shown in figure 4) each having a substantially segment shaped cross-section (figure 8 showing segment shaped cross sections similar to Applicant's figure 7) and an interface (figure 8 and figure B below which is similar to Applicant's figures 6a, 6b showing an interface 22) between the two channels 213 (figure 8), the method comprising the steps of: mixing and heating a first quantity of organic waste (column 34, lines 8-13 describing heating a first quantity of feed material and using the same screws used in carrying out the invention which mix the material as shown in figure 8 showing rotating screws) to form an organic powder (column 35, lines 47-65 describing the dried material having a moisture content of about 5% or less and being dried to the extent that they freely emit air-borne dust), . . . and heating the channels (column 31, lines 44-59 describing heating the channels); . . . , the method is carried out as a step by step process (column 17, lines 1-5 describing the apparatus using previously dried material and recycling it with wet feed similar to Applicant's Specification at

page 12, lines 23-28), the method is carried out as a continuous process (column 17, lines 6-15 describing the apparatus drying aqueous waste in the absence of recycling of dried product similar to Applicant's Specification at page 13, lines 4-10), the organic waste has a water content of more than about 40% by weight (column 16, lines 38-40 describing the sludge having an initial water content of 80 percent or more), the organic powder has a water content of about 10% by weight (column 35, line 50 describing the dried material having a moisture content of between 60% down to about 5% or less), an apparatus (figure 4, column 4, lines 44-46) for drying organic waste ("waste organic sewage" column 6, line 67-column 7, line 2) comprising: a vessel for mixing and heating a first quantity of organic waste (column 34, lines 8-13) to form an organic powder (column 35, lines 47-65 describing the dried material having a moisture content of about 5% or less), wherein the vessel comprises: at least two elongate adjacent channels 213 (figure 8 showing the channels which are elongate as shown in figure 4) each having a substantially segment shaped cross-section (figure 8 showing segment shaped cross sections similar to Applicant's figure 7) and an interface (figure 8 and figure B below which is similar to Applicant's figures 6a, 6b showing an interface 22) between the two channels, a first heater 277 (figure 12) for heating the channels (column 31, lines 44-59 describing the first heater 277 heating the channels through fluid ducts 214), . . . , a heat exchanger 214 (figure 8), the heat exchanger using the heat generated by the conversion unit to heat the vessel (column 31, lines 45-48 describing the channels having fluid ducts 214 closely adjacent to the bottom of the screws for auxiliary heating purposes), the heat exchanger 214 (figure 8) circulates hot gas (column 17, lines 56-58 describing steam as a suitable heat exchange fluid) beneath the vessel (figure 8), the organic waste has a water content of more than about 40% by weight (column 16, lines 38-40

describing the sludge having an initial water content of 80 percent or more), the organic powder has a water content of about 10% by weight (column 35, line 50 describing the dried material having a moisture content of between 60% down to about 5% or less), the vessel comprises at least two elongate channels 213 (figure 8 showing the channels which are elongate as shown in figure 4), each channel having a length (figure 4 showing that the channels have a length) and a substantially segment shaped cross-section (figure 8 showing the cross-section of the channels); and an axle 88, 89 (figure 4) associated with each channel, each axle 88, 89 (figure 4) mounted for rotation (figure 8 showing rotation, column 21, lines 10-11) about an axis parallel to the length of its respective channel 213 (figure 8), each axle mounting one or more helical blades 83 (figure 4), the vessel (figures 4 and 8) comprises a vessel for drying organic waste ("waste organic sewage" column 6, line 67-column 7, line 2 describing using the invention to dry organic waste), the vessel comprising at least two elongate channels 213 (figure 8 showing the channels which are elongate as shown in figure 4), each channel having a length (figure 4) and a substantially segment shaped cross section (figure 8 showing segment shaped cross sections similar to Applicant's figure 7), . . . , and the apparatus being capable of drying organic waste according to the method of claim 31 or claim 49 (column 1, lines 7-17 describing the invention relating to methods and apparatus for reducing volatile components from pasty material), except for wherein the heating comprises heating the interface so as to enhance breakdown of the organic waste at the interface, converting a portion of the organic powder to heat a second quantity of organic waste, the step of converting a portion of the organic powder comprises burning a portion of the organic powder, and a second heater for heating the interface, wherein, the interface between adjacent channels is heated so as to enhance breakdown of the organic

waste at the interface; and; a conversion unit for converting a portion of the organic powder to generate heat for heating a second quantity of organic waste, the conversion unit is a combustion unit for burning the portion of the organic powder, and with a radius of between 0.25m and 0.75m. However, Van Den Broek teaches converting (figure 1 showing gas which has dehydrated particulate sludge from the cyclonic separators 42 passing into ducts 78, 76 to be recycled back to the combustion chamber 38, column 3, lines 21-30 describing the combustion chamber burning solid fuel including the dehydrated particulate sludge and column 4, lines 62-66 describing a portion of the gas flow being directed through duct 78 back to the combustion chamber 38 where the recycled gas has a high temperature, particulate and moisture content) a portion of the organic powder to heat (column 3, lines 31-36 describing the combustion products being used in the drier) a second quantity of organic waste (column 3, lines 4-36 describing a second quantity of organic waste being dried in a dryer connected to the combustion chamber and column 2, lines 20-23), the step of converting a portion of the organic powder comprises burning (figure 1 showing gas which has dehydrated particulate sludge from the cyclonic separators 42 passing into ducts 78, 76 to be recycled back to the combustion chamber 38, column 3, lines 21-30 describing the combustion chamber burning solid fuel including the dehydrated particulate sludge and column 4, lines 62-66 describing a portion of the gas flow being directed through duct 78 back to the combustion chamber 38 where the recycled gas has a high temperature, particulate and moisture content) a portion of the organic powder (column 1, lines 44-51 describing the dehydrated particulate sludge as fines and particulates that are entrained in a gaseous discharge), a conversion unit 38 (figure 3) for converting a portion of the organic powder (figure 1 showing gas which has dehydrated particulate sludge from the cyclonic

separators 42 passing into ducts 78, 76 to be recycled back to the combustion chamber 38, column 3, lines 21-30 and column 4, lines 62-66) to generate heat for heating a second quantity of organic waste (column 3, lines 4-36 describing a second quantity of organic waste being dried in a dryer connected to the combustion chamber), the conversion unit 38 (figure 1, column 3, line 21-33 describing a combustion unit for burning organic powder) is a combustion unit for burning the portion of the organic powder ("dehydrated particulate sludge" column 3, line 30, column 1, lines 44-51 and column 4, lines 62-66) in order to provide a variety of fuels usable for heating the dryer (column 3, lines 21-30 and column 4, lines 62-66) and permit absorption of the desired quantity of moisture from the sludge feedstock as it passes through the drier (column 3, lines 39-42). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Buttner et al. reference, to include converting a portion of the organic powder to heat a second quantity of organic waste, the step of converting a portion of the organic powder comprises burning a portion of the organic powder, a conversion unit for converting a portion of the organic powder to generate heat for heating a second quantity of organic waste, the conversion unit is a combustion unit for burning the portion of the organic powder, as suggested and taught by Van Den Broek, for the purpose of providing a variety of fuels usable for heating the dryer and permitting absorption of the desired quantity of moisture from the sludge feedstock as it passes through the drier. The Applicant is combining prior art elements according to known methods to yield predictable results. The Applicant is combining the prior art elements of an organic waste dryer having a fluid heater to generate heat for heating a second quantity of organic waste as disclosed by Buttner et al. with the prior art elements of an organic waste dryer having a conversion unit for converting a portion of organic powder to

generate heat for heating a second quantity of organic waste where the conversion unit is a combustion unit for burning a portion of the organic powder as taught by Van Den Broek according to known methods to yield the predictable results of an organic waste dryer having a conversion unit for converting a portion of organic powder to generate heat for heating a second quantity of organic waste where the conversion unit is a combustion unit for burning a portion of the organic powder. One would be motivated to combine Buttner et al. with Van Den Broek because Van Den Broek teaches a conversion unit that burns a variety of fuels including the organic powder being produced by the dryer and the fluid heater of Buttner et al. which uses kerosene (Buttner et al., column 35, lines 28-30) could be similarly improved by using a variety of fuels including the organic powder being produced by its dryer, thus utilizing the more readily available fuel of organic powder and reducing or eliminating the cost of purchasing and shipping kerosene for the fluid heater.

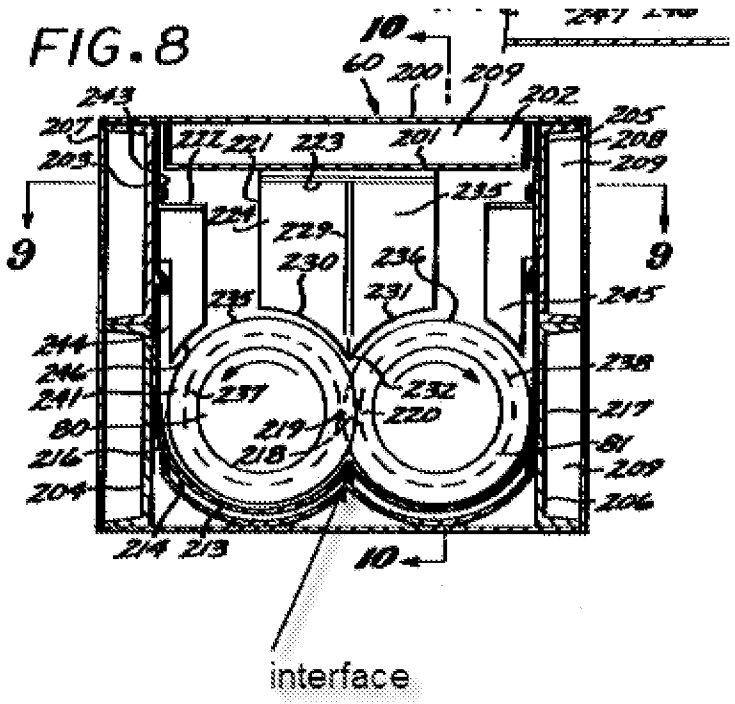
Metzner teaches wherein the heating comprises heating an interface 71 (figure 3, column 3, lines 47-51 describing a pipe 71 between each screw conveyor flight 12, 13 that is supplied with steam or other hot gas which is similar to Applicant's Figure 6b showing a heated interface 24) so as to enhance breakdown of the organic waste at the interface ("assist in breaking up the mass and vaporizing" column 3, lines 47-68 describing organic waste being broken down at the interface 71), and a second heater (figure 1 showing a supply of steam) for heating (column 3, lines 47-51 describing a pipe 71 between each screw conveyor flight 12, 13 that is supplied with steam or other hot gas) the interface 71 (figure 3), wherein, the interface 71 (figure 3) between adjacent channels (figure 3 showing screw conveyor flights 12, 13 in adjacent channels) is heated (column 3, lines 47-51) so as to enhance breakdown of the organic waste at the interface

("assist in breaking up the mass and vaporizing" column 3, lines 47-68 describing organic waste being broken down at the interface 71) in order to assist in breaking up the mass and vaporizing liquid (column 3, lines 59-64) and release liquid that is otherwise very difficult to remove (column 1, lines 21-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Buttner et al. in view of Van Den Broek reference, to include wherein the heating comprises heating the interface so as to enhance breakdown of the organic waste at the interface, and a second heater for heating the interface, wherein, the interface between adjacent channels is heated so as to enhance breakdown of the organic waste at the interface, as suggested and taught by Metzner, for the purpose of assisting in breaking up the mass and vaporizing liquid and releasing liquid that is otherwise very difficult to remove. The Applicant is combining prior art elements according to known methods to yield predictable results. The Applicant is combining the prior art elements of removing liquid from organic waste using a heated vessel having an interface between adjacent channels having counter rotating screws as disclosed by Buttner et al. with the prior art elements of removing liquid from organic waste using a vessel having a heated interface between adjacent channels having counter rotating screws so as to enhance breakdown of the organic waste at the interface and having a second heater for heating the interface as taught by Metzner according to known methods to yield the predictable results of removing liquid from organic waste using a heated vessel having a heated interface between adjacent channels having counter rotating screws so as to enhance breakdown of the organic waste at the interface and having a second heater for heating the interface. One would be motivated to combine Buttner et al. with Metzner because Metzner teaches a heated interface to assist in breaking up a mass of organic waste and

vaporizing liquid that would otherwise be very difficult to release and Buttner et al. could be similarly improved by having a heated interface to assist in breaking up its mass of organic waste and help vaporize liquid that would otherwise be very difficult to release, thus providing an even drier final product and faster breaking up of the organic waste.

It would have been an obvious matter of design choice to increase the radius of the channels from 0.133 m (Buttner et al., column 35, lines 8-10 describing the screws as having a diameter of 10.5 inches or 0.267 meters and where the channels 213 conform to the diameter of the screws as shown in figure 8 and column 15, lines 6-20 describing optimizing the dryer for different dimensions) to 0.25 m, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose, 105 USPQ 237 (CCPA 1955).*

Figure B.



21. Claim 65 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buttner et al. (US Patent No. 5,263,267) in view of Metzner (US Patent No. 2,459,951).

22. Regarding claim 65, Buttner et al. discloses a vessel (figures 4 and 8) for drying organic waste (column 6, line 67-column 7, line 2), the vessel comprising: at least two elongate adjacent channels 213 (figure 8 showing the channels which are elongate as shown in figure 4), each channel having a length (figure 4) and a substantially segment shaped cross-section (figure 8 showing segment shaped cross sections similar to Applicant's figure 7); an axle 88, 89 (figure 4) associated with each channel, each axle 88, 89 (figure 4) mounted for rotation (figure 8 showing rotation, column 21, lines 10-11) about an axis parallel to the length of its respective channel 213 (figure 8), each axle mounting one or more helical blades 83 (figure 4); an interface (figure 8 and figure B above which is similar to Applicant's figures 6a, 6b showing an interface 22) between the two channels 213 (figure 8); and a first heater 277 (figure 12) for heating the channels (column 31, lines 44-59 describing the first heater 277 heating the channels through fluid ducts 214), wherein, during drying, the axles associated with adjacent channels are arranged to rotate in opposite directions (figure 8 showing the axles associated with adjacent channels rotating in opposite directions, column 15, lines 6-20 describing two counter-rotating screws rotating during drying), except for the interface between adjacent channels is heated so as to enhance breakdown of the organic waste at the interface, wherein the interface is heated by a second heater. However, Metzner teaches an interface 71 (figure 3, column 3, lines 47-51 describing a pipe 71 between each screw conveyor flight 12, 13 that is supplied with steam or other hot gas which is similar to Applicant's Figure 6b showing a heated interface 24) between adjacent channels (figure 3 showing screw conveyor flights 12, 13 in adjacent channels) is heated (column 3, lines

47-51) so as to enhance breakdown of the organic waste at the interface ("assist in breaking up the mass and vaporizing" column 3, lines 47-68 describing organic waste being broken down at the interface 71), wherein the interface is heated by a second heater (figure 1 showing a supply of steam) in order to assist in breaking up the mass and vaporizing liquid (column 3, lines 59-64) and release liquid that is otherwise very difficult to remove (column 1, lines 21-33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention was made to modify the Buttner et al. reference, to include the interface between adjacent channels is heated so as to enhance breakdown of the organic waste at the interface, wherein the interface is heated by a second heater, as suggested and taught by Metzner, for the purpose of assisting in breaking up the mass and vaporizing liquid and releasing liquid that is otherwise very difficult to remove. The Applicant is combining prior art elements according to known methods to yield predictable results. The Applicant is combining the prior art elements of removing liquid from organic waste using a heated vessel having an interface between adjacent channels having counter rotating screws as disclosed by Buttner et al. with the prior art elements of removing liquid from organic waste using a vessel having a heated interface between adjacent channels having counter rotating screws so as to enhance breakdown of the organic waste at the interface and having a second heater for heating the interface as taught by Metzner according to known methods to yield the predictable results of removing liquid from organic waste using a heated vessel having a heated interface between adjacent channels having counter rotating screws so as to enhance breakdown of the organic waste at the interface and having a second heater for heating the interface. One would be motivated to combine Buttner et al. with Metzner because Metzner teaches a heated interface to assist in breaking up a mass of organic waste and

vaporizing liquid that would otherwise be very difficult to release and Buttner et al. could be similarly improved by having a heated interface to assist in breaking up its mass of organic waste and help vaporize liquid that would otherwise be very difficult to release, thus providing an even drier final product and faster breaking up of the organic waste.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kelly (US Patent No. 1,261,132) discloses a dryer for drying pasty material using steam passing under screw conveyors.

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to COREY HALL whose telephone number is (571)270-7833. The examiner can normally be reached on Monday - Friday, 9AM to 5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Rinehart can be reached on (571)272-4881. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Corey Hall/
Examiner, Art Unit 3743
/Kenneth B Rinehart/
Supervisory Patent Examiner, Art Unit 3743